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BUREAU OF ENTOMOLOGY

FOREST INSECT INVESTIGATIONS

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REPORT OF FOREST INSECT CONDITIONS IN THE SOUTHERN NATIONAL FORESTS OF THE CALIFORNIA DISTRICT

JUNE - 1936

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by
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Berkeley, California
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Forest Insect Laboratory
Berkeley - California
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JUNE - 1936

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REPORT OF FOREST INSECT CONDITIONS IN THE SOUTHERN NATIONAL FORESTS OF THE CALIFORNIA DISTRICT JUNE - 1936

The regular Regional Insect Survey conducted annually in the National Forests of the eastside and central Sierra regions by the Forest Insect Laboratory at Berkeley has not been extended to include the southern California forests. Consequently little has been known of what was developing in these forests aside from reports of local outbreaks principally on small recreational areas, and from infrequent examinations made by the Bureau of Entomology and Plant Quarantine of special areas where local problems had arisen. The need for a more extensive survey to get information on the general situation has been urgent for some time.

A continuation of the cooperative arrangement between the Forest Service and the Bureau of Entomology and Plant Quarantine effected for the examination of the northwestern forests made it possible to extend the survey to include these southern forests.

The National Forests included in this phase of the program were the San Bernardino, Cleveland, and Santa Barbara.

SAN BERNARDINO FOREST

The principal forested areas of this forest are outlined on the maps, pages 10 and 11. These areas were examined on June 19, 20, and 21.

Area "A", Big Bear and Arrowhead Lake: The forests of this area are subjected to intensive recreational use, but are protected from sporadic cutting and other disturbances tending to increase insect infestations. However, several past infestations have caused considerable alarm to property owners and have resulted in losses in the more valuable stands. These past experiences have promoted a keen realization of the hazards of insect infestations that are allowed to develop to threatening proportions. The ranger force in the Arrowhead district keeps a close watch on insect activity and should be able to detect and report any increase in infestations in the incipient stage.

Present infestations in the region surrounding Arrowhead Lake are negligible and scarcely noticeable. It is possible to find a few widely scattered trees, both ponderosa pine and Coulter pine, that have been killed by the western pine beetle, showing that this insect has not entirely disappeared from the area. Scattered ponderosa pine trees killed by the same beetle are conspicuous along the Rim of the World drive from Skycrest to the junction of the City Creek Road. Not more than 10 or 12 of these dead trees were seen in the total distance of 6.5 miles, indicating a very low infestation.

However, conditions in Little Green Valley indicate an increasing infestation in the ponderosa pine and Jeffrey pine stands. The western pine

beetle and Jeffrey pine beetle infestations show considerable increase over those of late years, the 1935 loss being about twice that of the previous year and will average 20 dead trees per section throughout the valley and on the surrounding ridges. While these infestations have not yet reached alarming proportions the area should be watched closely to detect any further increase.

A widely scattered infestation of the Jeffrey pine beetle in Jeffrey pine is noticeable for a distance of about a mile back from the north shore of Big Bear Lake. This infestation should not be considered serious as it shows no indications of an early increase, yet the open character of the timber allows each faded tree to stand out prominently, giving the appearance of a higher infestation than actually exists. This area should also be watched closely.

Area "B", Idyllwild: The Idyllwild and Thomas Mountain areas were examined in company with District Ranger L. A. Horton. The forests of this district occur irregularly in more or less detached stands interspersed with brush areas. Infestations show somewhat different characteristics corresponding to difference in type and site found on each separate area. The general insect situation is much improved from the status of previous years. Infestations have declined considerably in all parts of the district and are now at the minimum on the principal recreational areas. The greatest recent loss has occurred in an area of about 5 sections extent on the Banning Road near the crossing of the San Jacinto River. A total of 60 trees killed in 1935 was counted on this area. The loss includes both ponderosa pine and Jeffrey pine, with a few sugar pine. Examination of several of the dead trees showed the work of the western pine beetle and Ips in the ponderosa pine, the Jeffrey pine beetle and flatheads in the Jeffrey pine, and the mountain pine beetle and flatheads in the sugar pine. Three fading sugar pine trees at Pine Flat Camp were infested with new broods of the mountain pine beetle. A dead area of fir on the west side of San Jacinto Peak indicated recent activity of Scolytus, but this infestation like that in the pine, had greatly decreased and no recent fading was evident.

Conditions in Strawberry Valley are greatly improved over those of previous years in this important recreational center. No recently killed trees could be found in or near several old groups that were killed in 1934 when the peak of the recent outbreak was reached.

Several small groups of recently killed Coulter pine have appeared in the sparse stands between Idyllwild and Keen Camp indicating concentration of the remaining infestation on exposed sites situated on ridges near the lower margin of the timber. None of these groups contained more than 10 dead trees, and most of them had less than that number. A strip of the same type of infestation extends back to Antsell Rock on the south slope of Tahquitz Peak; the two infestations covering a total area of about 12sections. These groups of small trees were killed in 1935 by the western pine beetle and are mostly located in marginal type outside of the intensively used recreational areas. There are no indications that these losses are increasing and no immediate action seems necessary unless the 1936 infestation shows aggressive tendencies.

A few large ponderosa pine trees were killed in 1935 on the Idyllwild recreational area. Such trees should be removed and treated in the future as soon as it is evident that they are attacked by insects, in order to prevent further loss, and to extend all the protection possible to these valuable stands.

Area "C", Thomas Mountain: Recent infestations in the sparse stands north and west of this mountain have been low, and the result is minimum losses. A few scattered, red, trees are visible on the ridge west of Hemet Lake, but the total will not exceed 40 trees on the entire infested area of about 5 sections. The majority of these trees have been killed by flatheads.

A disturbing number of topkilled ponderosa pine and Coulter pine are visible on the northeast side of Thomas Mountain. This topkilling occurred early in 1936 and resulted from attacks of Ips oregoni. Only the last two or three feet of the tip is affected, and at this time the foliage of the killed section had turned a bright orange-red, highly visible for a considerable distance. The abundance of these trees indicates at first glance the beginning of a real epidemic. However, close examination of affected tops showed that the attacking beetles, while successful in killing the main stem for a length of a few feet, were pitched out and had been unable to develop broods, so that it appears the infestation will die out in its inception. Since it was possible to get only a first impression of this injury and damage, subsequent examinations should be made later in the fall to determine the outcome of these first attacks. Observations made in other parts of the area showed that about 40% of the green trees had acquired dead and blackened tops, indicating previous widespread damage of this same character and probably caused by the same insect.

Area "D", Sugarloaf Mountain: There is a small, detached stand of Jeffrey pine and pinon on the northwest side of this mountain which is several miles distant from any other trees of the same species. A small number of Jeffrey pine trees in this isolated stand were killed by flatheads in 1935. This infestation is of no import other than its distant removal from other infestations, which is an interesting entomological detail. The officers charged with the protection of the recreational areas on this forest are alive to the damaging activities of insects and maintain a constant watch on any recent developments. They should be able to take immediate action in the removal of any infestations that develop to damaging proportions.

CLEVELAND FOREST

Certain areas of this forest, outlined on the maps, pages 12 and 13, were examined during the period June 22 to 25. The Palomar district was visited first. District Ranger Hayward at Oak Grove was helpful in suggesting routes of travel and outlining areas of past insect infestations. Areas on the Descanso district were examined in company with Supervisor Ellis and Ranger Stephenson.

Area "A", Palomar: Very little timber capable of supporting sizeable insect infestations occurs in this district of the forest. However, a few small

stands have developed local infestations in the past that were quite damaging for short periods. An intensive Ips infestation destroyed a high percentage of immature Coulter pine in Dyche Valley in 1930, and a similar outbreak in 1934 resulted in heavy losses in ponderosa pine on an area north of Palomar. These two areas were visited in the examination of Palomar Mountain, but it was found that the infestations in both had entirely disappeared without causing recent loss in these zones. The only evidence of recent infestation that could be found on the entire mountain was a group of 20 young ponderosa pine trees between Mill Valley and Dyche Valley that had been killed by Ips early in 1935. See photograph in Plate I, page 7. No trace of current activity of these broods was evident anywhere in this vicinity.

Ranger Hayward reported in infestation of Ips in Pine Valley at the extreme eastern part of the district but stated that it was rapidly declining. He examined the area in 1935 and counted 300 trees that had been killed the previous year on 2000 acres. A recheck made early in 1936 showed that the 1935 loss had declined to less than 100 trees on the same area. This area was not visited in the present examination.

Area "B", Cuyamaca: This area includes the Cuyamaca State Park and some National Forest, Indian Reservation, and privately owned lands, lying west of it. The greater portion of the park has been free of damaging insect infestations during recent years and there are no present indications of a change in this status. However, a local infestation appeared on the southeast flank of Cuyamaca Peak in 1935 which spread rapidly over an area of about 2,000 acres. The winter broods developed from late 1935 attacks were treated in the spring of 1936. This control work was accomplished by CCC labor and resulted in the treatment of 325 infested trees. Outside the park there is a disturbing number of fresh group infestations springing up in the mixed ponderosa pine and Coulter pine stands. These groups extend from the western slopes of North Peak south to the western ridges of Cuyamaca Peak and cover an area of about 12 sections. The infestation is not uniform throughout this zone, but occurs in groups of young trees ranging from 3 to 4 trees to as many as 60 trees in each group. Photographs of two small sections of this infestation, showing both recent and older groups, are shown in Plate II, page [illegible]. There is ample evidence that this infestation has greatly increased during the past year. A comparison of the number of older groups with the most recent ones shows that the increase has been at least twofold since 1934. At the time the examination was made it was too early to secure quantative data on the amount of 1936 loss, since only a part of the potential loss of this year had occurred up to that date, and very few trees of the early seasonal attacks had faded. The prevalence of freshly attacked trees close to several groups that were examined, indicated that the total seasonal loss of 1936 will at least equal that of the preceding year. These freshly attacked trees had not yet faded but were heavily attacked by the western pine beetle. Numerous prominent pitch tubes at points of attack indicate that the trees are offering considerable resistance which may adversely affect brood development. However, the 1936 trend of this infestation cannot be finally determined until later in the fall when a large portion of this loss will be evident in

faded trees. Another examination should be made in September or early October for the purpose of securing data on the year's loss; and to decide upon the advisability of control, and the formulation of plans if control work is undertaken.

Area "C", Laguna: This area is largely devoted to recreational use. There is a very fine, even aged, stand of pine in the higher elevations which is subjected to intensive summer use. Notable insect infestations have occurred in recen past years but these have greatly declined since 1934. The control work carried out on this area in the summer of 1933 probably accounts for the reduced infestation since that time. There was a minimum loss in 1935 amounting to a total of about 30 trees on an area of 5 sections in extent. These trees, ponderosa pine, Jeffrey pine, and Coulter pine, mostly of medium to small diameters, were killed by mixed broods of flatheads and Ips. The dead Coulter pine trees had been killed by the western pine beetle. Since the current infestation is at a minimum for these stands, no control work is recommended.

Rustic guard rails made of freshly cut logs erected in the main campground at Laguna formed an attractive trap for Ips beetles. See photographs, Plate III, page 9. There were about 500 logs salvaged from road slash utilized in this way. They were heavily attacked by the engraver beetles, Ips oregoni, and had developed good broods. New adults developed from the earlier attacks were ready to emerge at the time these logs were examined. Two species of flatheads, Melanophila californica and Chrysobothris pseudotsugae, were also attacking these logs. Recommendation to Supervisor Ellis that these infested logs be peeled and the bark burned, in order to destroy the Ips broods before emergence was immediately put into effect and this control work was well under way the following day. Some additional logs unfit for salvage were left along the road slash on other parts of the area, and as these were also attacked, they were marked for treatment in the same way. The probable death of many green trees on the recreational area wasprevented by killing the Ips broods before they emerged from the railings and the slash, while at the same time the beetle population on the recreational area was reduced by the horde of beetles that had been trapped in this material. These same beetles would have normally attacked green trees and thereby increased the infestation in the standing timber somewhere on the area. However, creation of slash for this purpose is not recommended in recreational areas because of the possibility of attracted beetles attacking nearby standing trees also. The fact that this did not occur in this instance is probably due to the preponderance of slash available for the beetles to attack.

Area "D", Corte Madera: The pine stands on this area are small and greatly scattered. Former insect infestations which resulted in the death of many valuable trees have almost entirely disappeared. A total of 7 dead trees were visible in the stands at Pine Valley. These trees were killed in 1935. No recent attacks werefound. The infestation of 1935 at Corte Madera was represented by 4 faded trees, widely scattered.

Summation of Survey Data: Since infestations on all the areas except Cuyamaca have greatly decreased in recent years, and present indications

are that further decline may be expected, no control work is recommended as long as this status is maintained. Frequent examinations should be made, however, by the local forest officers in order to detect any change toward increases in these endemic infestations. If any increases should arise which warrant control work, these officers are fully qualified to carry out whatever control work is necessary.

As previously stated, the Cuyamaca infestation should be re-examined later in the comming fall period before any definite recommendations are made.

SANTA BARBARA FOREST

The Figueroa area of this forest was examined on June 27. Previous to visiting the area the general insect situation on the forest was discussed with Supervisor Nash-Boulden and Assistant C. S. Robinson at Santa Barbara.

The examination of Figueroa was made in company with Ranger A. L. Davis, who is thoroughly familiar with conditions on the area and the insect infestations that have occurred in the past.

Previous insect infestations have shown a higher intensity and greater loss in number of trees killed than that of 1935, the loss on which complete data are available. Control work carried out in 1934-35 resulted in the treatment of 107 trees which represented the winter infestation, or about one half of the total loss of 1934.

At present the forest is remarkably free of insect infestations, the only visible evidence of recent loss being a few faded trees that were missed in the control work of last spring. This work, which was carried out under Ranger Davis' supervision with ERA labor, was successful in covering all of the Figueroa area during the period January, February and March. A total of 41 trees, both ponderosa pine and Coulter pine, was treated. This number of infested trees shows a reduction in winter brood of 62% since 1934. These trees were infested with the western pine beetle. The efficiency of this job is shown by the very few trees that have faded since the workdwas done.

The tendency toward recurrent losses following control work on this area has been a pronounced feature of past infestations. Reinfestation of the area has followed several past control projects. This result is perhaps due to characteristics of the forest which is of the marginal type, and apparently critically influenced by climatic factors tending toward high susceptibility of insect attack.

The policy of management followed in the past, which provided for periodic cleanup by direct control work whenever increasing insect losses occurred, is perhaps the best plan to follow in the future. This scheme of protection is recommended as the best practicable method of keeping infestations down to a minimum.

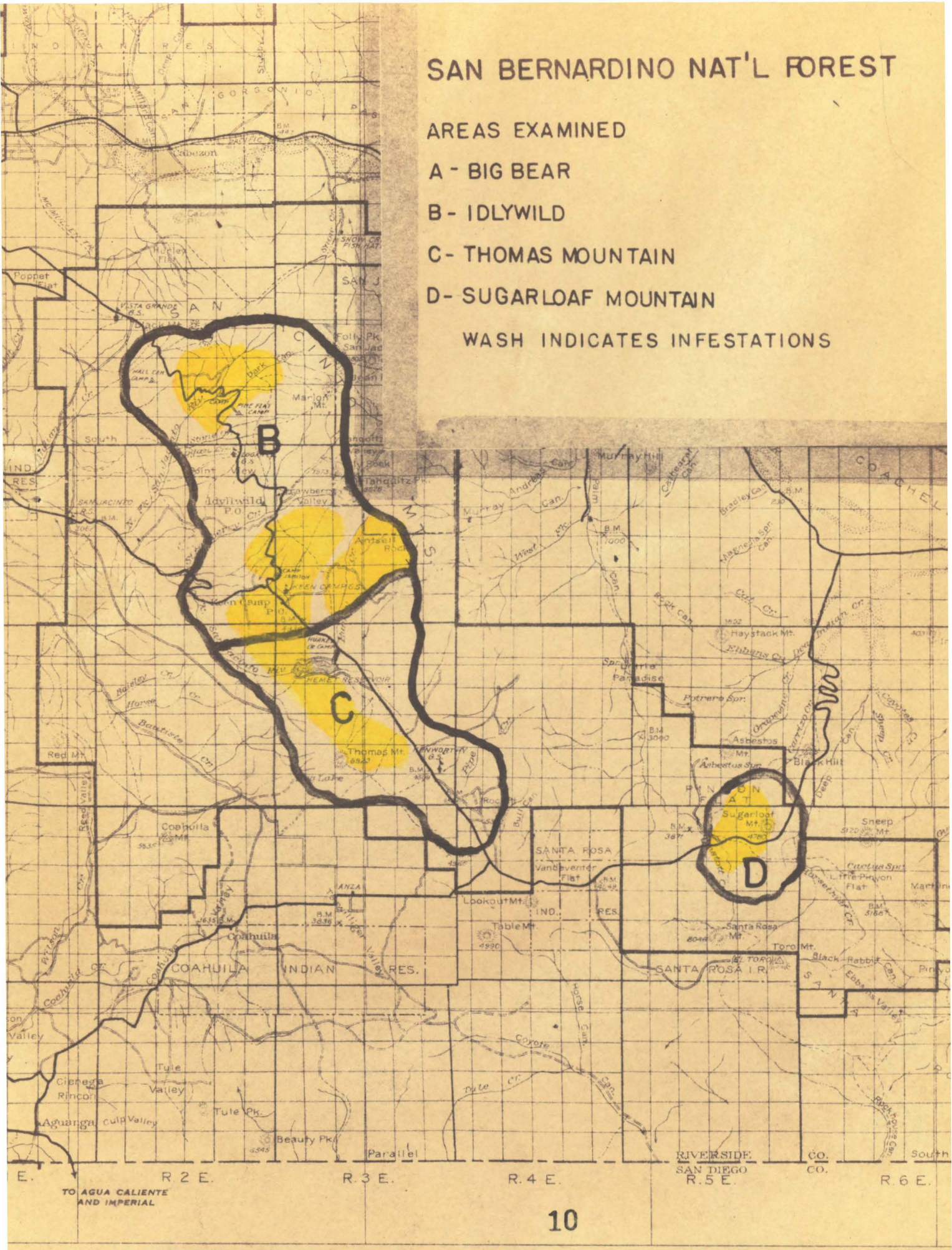
PLATE I

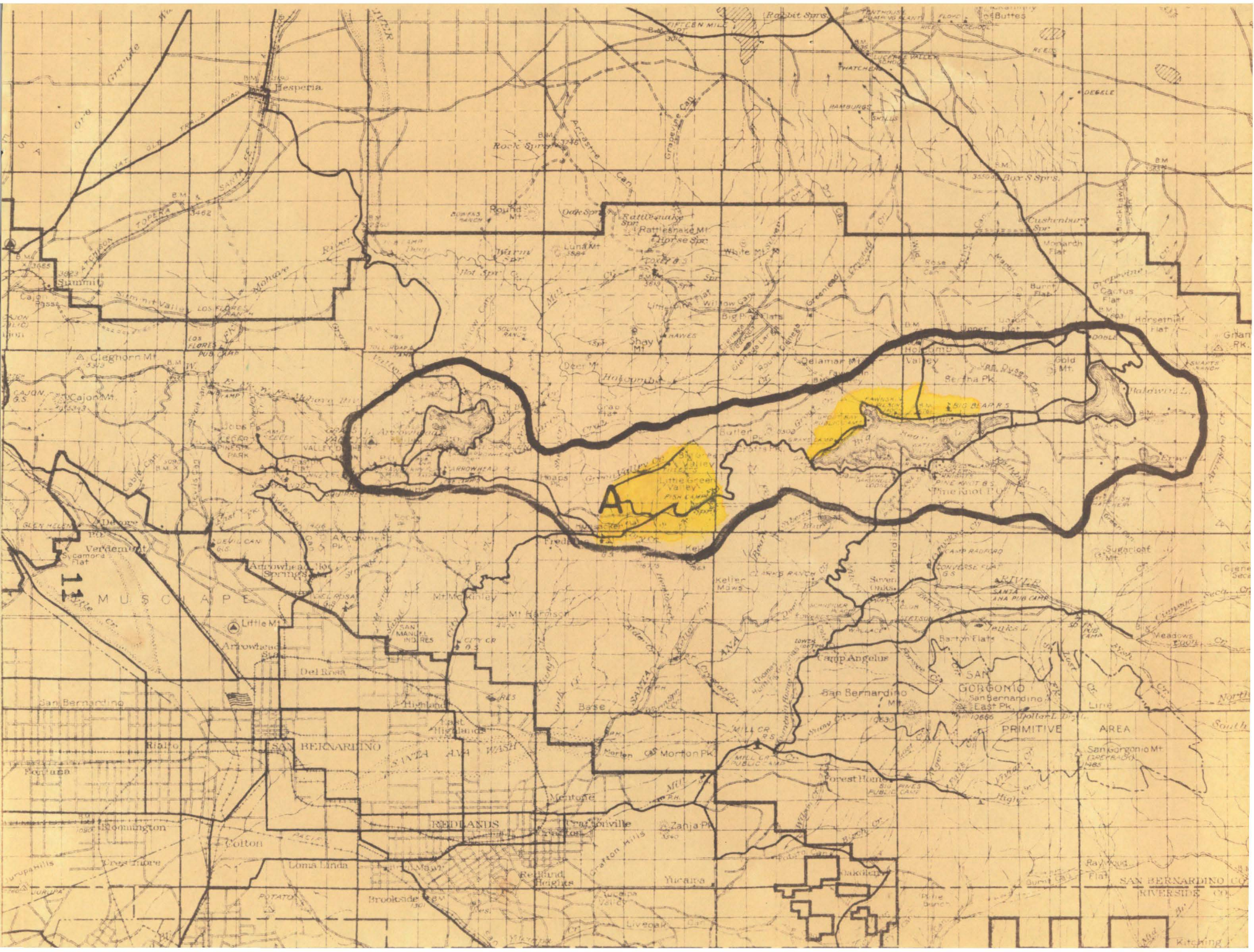
A large group of ponderosa pine trees killed in 1935 by Ips sp. near Dyche Valley, Palomar Mountain, Cleveland National Forest. The infestation which caused this damage has disappeared from natural causes. No trees infested with current year broods could be found in June 1936.

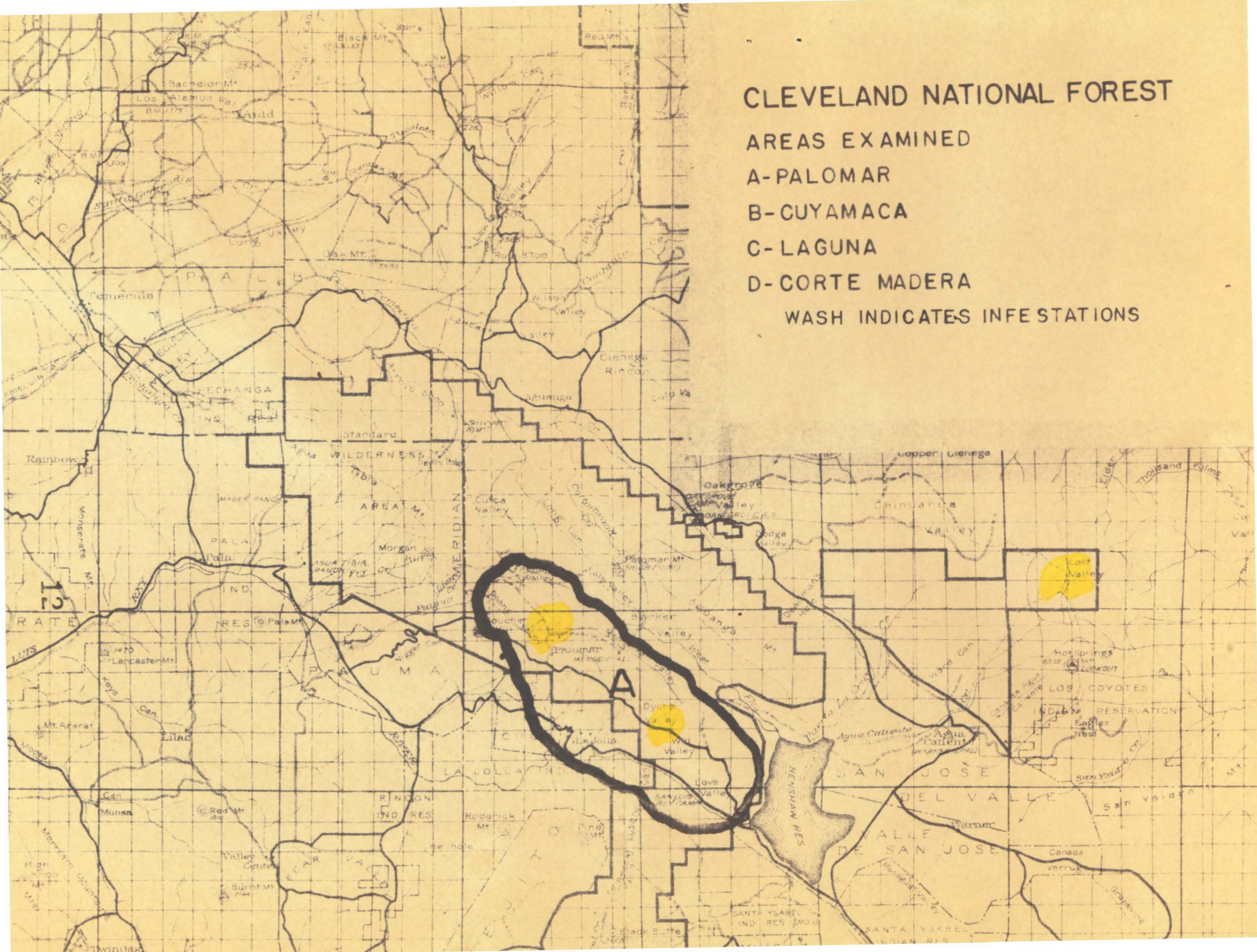
Group infestation in ponderosa and Coulter pine on west side of Cuyamaca Peak, Cleveland National Forest and Cuyamaca State Park. The insect killed trees appear in lighter tone than the surrounding green trees, which is due to fading of the foliage. Actually they are sorrell to orange-red in color - the panchromatic photograph renders these colors as white. Those beetle killed trees occurring in small to large groups represent a recent spread and build-up of the infestation. The lighter-colored groups - center and extremeleft of upper picture and center of lower - were attacked by the western pine beetle late in 1935. The darker-colored groups - on the skyline in both pictures - were attacked in the spring of 1935, and represent the preceding generation of the beetle.

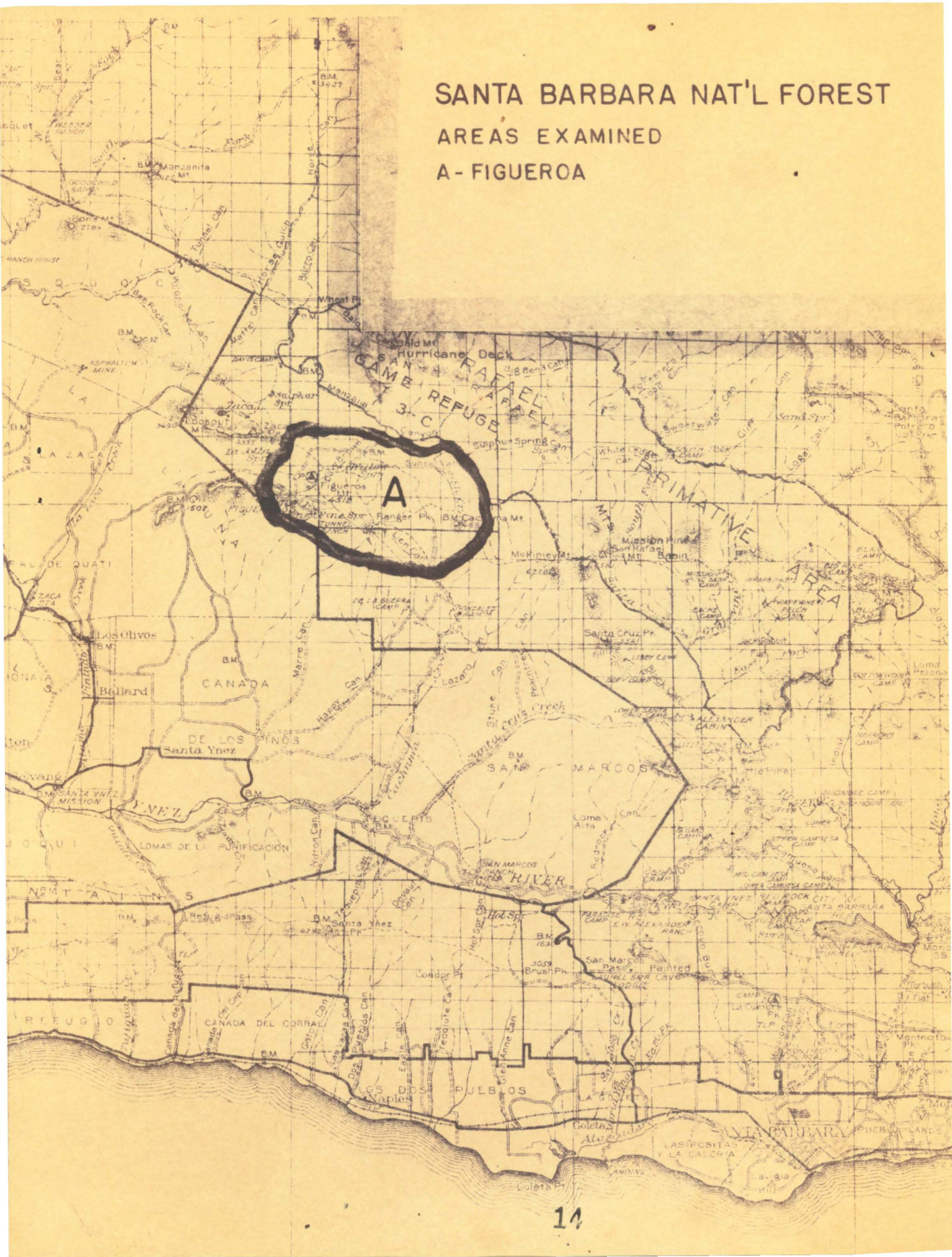
PLATE III

Green ponderosa pine logs from road slash salvaged for use and built into guard rails on Laguna Recreation Area, Cleveland National Forest. These logs, averaging about 16" in diameter, were cut at intermittent periods from February 1 to May 1, 1936, and were in prime condition for the first seasonal barkbeetle attacks. They were erected on stools, as shown in the upper picture, during May and June. Practically every log was attacked by Ips sp. The early attacks were made in April on the first logs cut. These broods had developed to the new adult stage by June 20. Attacks on other and more recent logs were continuous up to this latter date. Lower picture is of a profusion of galleries on a peeled log showing the heavy concentration of the attacks. The logs were peeled and the beetle broods destroyed in late June.


SAN BERNARDINO NAT'L FOREST
AREAS EXAMINED
A - BIG BEAR
B - IDLYWILD
C - THOMAS MOUNTAIN
D - SUGARLOAF MOUNTAIN
WASH INDICATES INFESTATIONS
B
C
D
COAHUILA INDIAN RES.
SANTA ROSA IND. RES.
SANTA ROSA I.R.
R 2 E.
R.3 E.
R.4 E.
R.5 E.
R 6 E.
TO AGUA CALIENTE AND IMPERIAL


A
Hesperia
Summit
Cajon Mt
Verdemont
Arrowhead Springs
San Bernardino
Rialto
Fontana
Colton
Loma Linda
REDLANDS
Mentone
Crafton
Yucaipa
Redlands Heights
Brookside
Zahja Pk
Morton Pk
Camp Angelus
San Bernardino Mt
East Pk
PRIMITIVE
AREA
SAN BERNARDINO CO
RIVERSIDE CO
Big Bear
Baldwin L
Gold Mt
Sugarloaf Mt
Delamar Mt
Shay Mt
Lunar Mt
Rattlesnake Mt
Round Mt
Rock Spring
Box S Spring
Rabbit Spring
Cushenbury Spr
Cajon Mt
Little Mt
Arrowhead Mt
Mt McKinley
Mt Harrison
Keller Mtns
Silver Mtns
Deer Mt
Butler Peak
Pine Knot Pk
Bertha Pk
Big Bear Valley
Little Green Valley
Holcomb Valley
Del Rosa
Base
Highland
Forest Home
Barton Flats
Meadows
Jenks L
Apollo L
Cactus Flat
Horsethief Flat
Raywood Flat
Grand Pk
Deluxe
Glen Helen
Sycamore Flat
Kitching
11
MUSCUPIAE


CLEVELAND NATIONAL FOREST
AREAS EXAMINED
A-PALOMAR
B-CUYAMACA
C-LAGUNA
D-CORTE MADERA
WASH INDICATES INFESTATIONS
A
Palomar Mt
Pala
Rainbow
Fallbrook
Temecula
Lancaster Mt
Mt Ararat
Red Mt
Rodrick Mt
Burnt Mt
Black Mt
Sachelon Mt
Los Alamos Mt
Thirsty Mt
Oak Mt
Red Mt
Red Top
Standard
Cleveland
Cuca Valley
Morgan Flat
Love Valley
Dyche Valley
Lost Valley
Oakgrove
Chihuahua Valley
Dodge Valley
Copper Cienega
Thousand Palms
Hot Springs
Agua Caliente
Agua Caliente Warm Springs
Los Coyotes Indian Reservation
Eagle Nest
Henshaw Res
San Ysidro
Canada Verde
Santa Ysabel Ind Res
Mesa Grande Ind Res
Pala Ind Res
Rincon Ind Res
La Jolla Ind Res
Pauma
Valley Center
Pala Valley
Monserrate Mt
Eagle Rock
Lilac
Mt Woodson
Elsinore
Wilderness Area
Meridian
T 12 S
R 4 W


SANTA BARBARA NAT'L FOREST
AREAS EXAMINED
A - FIGUEROA
A
SAN RAFAEL GAME REFUGE
PRIMATIME AREA
Hurricane Deck
Figueroa Mt.
Ranger Pk.
McKinley Mt.
Mission Pine
Santa Cruz Pr.
Los Olivos
Ballard
CANADA
DE LOS PINOS
Santa Ynez
SAN MARCOS
SAN MARCOS RIVER
Lomas de La Purificación
Refugio Pass
Santa Ynez Pk.
Brush Pk.
Condor Pt.
CANADA DEL CORRAL
LOS DOS PUEBLOS
Naples
Goleta
SANTA BARBARA
LAS POSITAS Y LA CALERA
Painted Cave
Lomas Alta
Manzanita Mt.
Sulphur Spring Can.
Lazaro Can.
Marre Can.
Happy Can.
Hilton Can.
Tinaquaic Can.
Arroyo Hondo
Gato Can.
Dos Pueblos Can.
Las Llagas Can.
Tecolote Can.
Hot Spr.
Sulphur Spr.
Wheat R.
Big Bend camp
Sweetwater Camp
Rock City
Paradise Camp
Lower Camuesa Camp
Upper Camuesa Camp
Alexander Camp
Gibraltar Camp
Lower Camp
Upper Camp
Mission Pine Camp
Gonzales Camp
Lazaro Camp
Sycamore Camp
Hilton Camp
Tinaquaic Camp
Rattlesnake Camp
Jackrabbit Camp
Lizard Camp
Lomd Pelona
Montecito
Santa Barbara
Goleta Pt.
Andrs